Workshop on In-Space Fabrication and Repair

The Microgravity Science Glovebox

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National Aeronautics and Space Administration

MICROGRAVITY SCIENCE GLOVEBOX

MSFC Microgravity Science & Applications Department

MSG Engineering Unit
Maintained at at MSFC

National Aeronautics and Space Administration

MICROGRAVITY SCIENCE GLOVEBOX

MSG FACT SHEET

MSFC Microgravity Science & Applications Department

Launched on UF2 in June 2002

Work Volume	906mm Wide x 637mm High 500mm Deep (floor), 385mm Deep (top)
Max. Entrance	406 mm Diameter
Power to Investigation (1000 watts Total)	7 amps @ 28 volts, 4 amps @ 5 volts 2 amps @ +12 volts, 2 amps @ -12 volts 8.3 amps @ 120 volts
Heat Dissipation	800 watts from Cold Plate 200 watts from Air Flow
Video	3 Color, 1 B&W camera, 4 Recorders (Sony, Digital)
Other Resources	Gaseous Nitrogen Vacuum Vent

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MSG DATA SYSTEM

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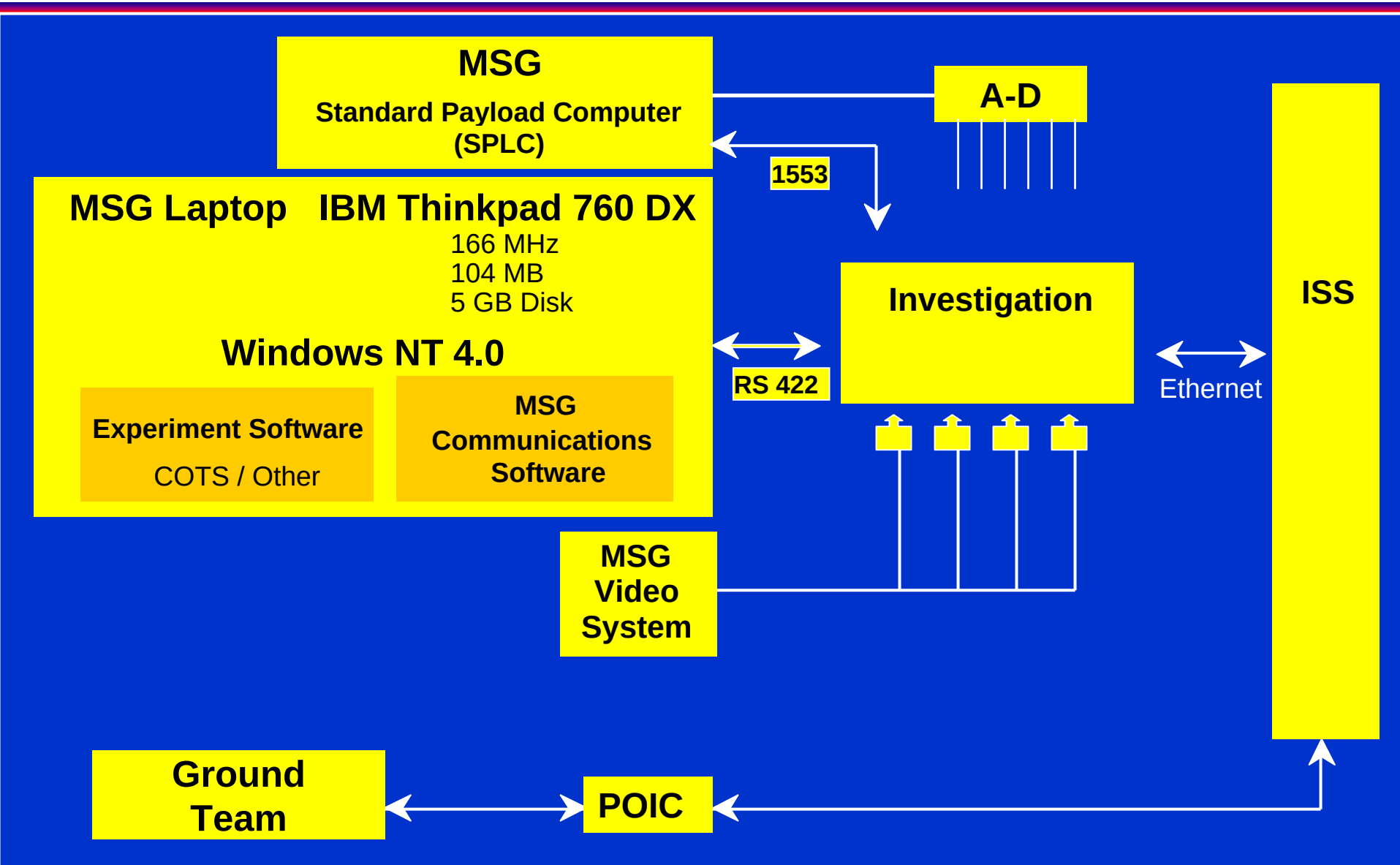

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FIRST YEAR OF OPERATIONS

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During its initial year the Microgravity Science Glovebox successfully completed its first materials science experiment (SUBSA) and a series of ESA experiments during the Soyuz 5 Mission. Three experiments are currently on-orbit and in progress.

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REPAIR STATUS

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Failure History

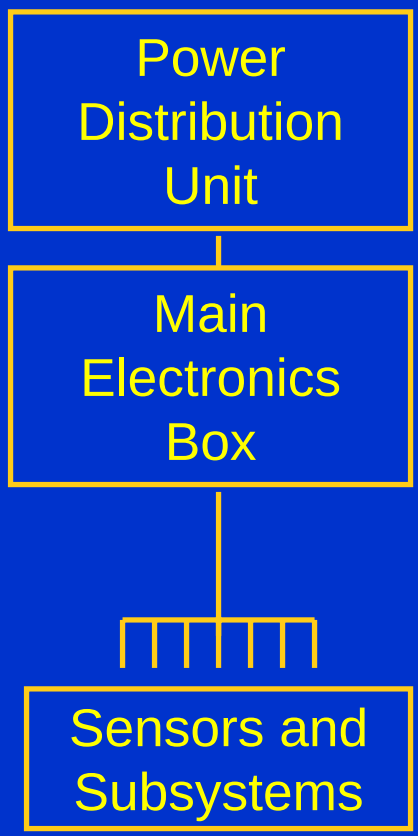
November

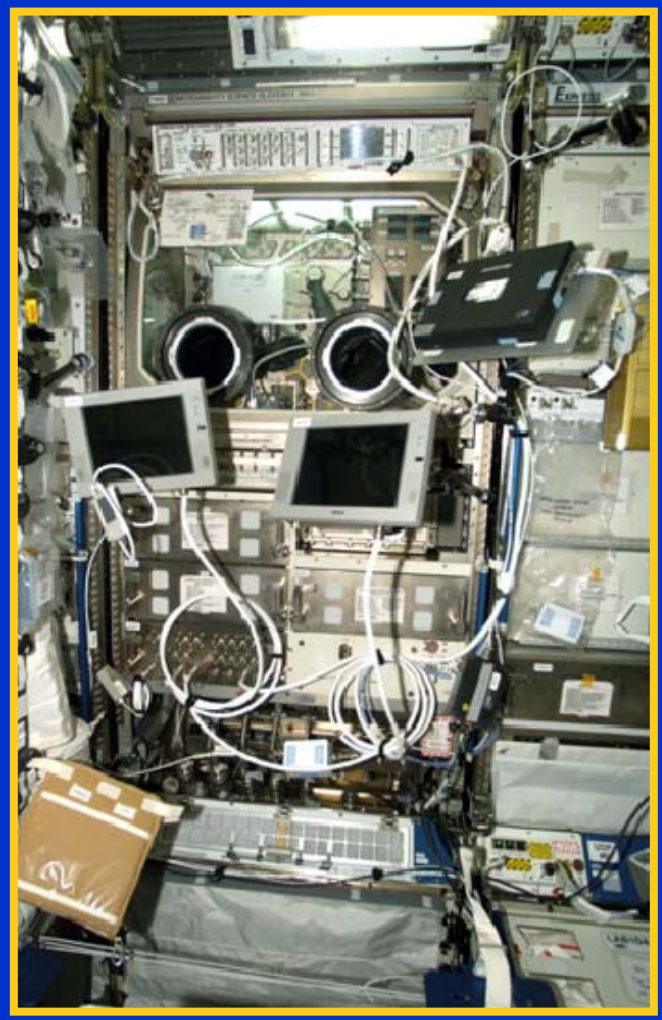
12 volt Current Spike and 5 volt Converter Failure

February

Repair Unit on Progress

Reoccurrence of 12 volt Current Spike





Recovery

All Subsystems Disconnected at E-Box and Individually Reconnected – Fault Disappeared

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ON-ORBIT TROUBLE SHOOTING

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Rack Rotated Forward to Allow Access to Electronics from Rear

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Example Program

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Quantify the effects of Micro-G on Fabrication Processes

Science Community

- Instrumentation
- Micro-G Modeling

Workshop

Fabrication and Repair Testbed

Flight Unit

Engineering Community

- Fabrication Expertise
- Hardware

Fast and Highly Visible Program

2003 2004 2005 2006 2007